During my co-op assignment I worked in the Product Support Engineering department for the CT7/T700 engines. These engines are used on many military and civilian helicopters, including the Blackhawk helicopter line. The role of the department was to ensure the proper functioning of the engines out in the field and to manage any repair work that needed to be done for the customer. As a product support engineering co-op it was my responsibility to keep track of the returns, warranty and concessions and reliability metrics of the engines. These were my day to day activities, however, by the end of the assignment I was fortunate to work on a bigger project regarding improving the power turbine shaft overhaul process.

It took a while for me to start contributing to the group, mainly because there is no formal training program and because it took a while to get set up with the computer and all of the programs that I needed to manually get access to. The people that I worked with were awesome, incredibly nice and very approachable, everybody was willing to help out with any questions I’ve had throughout my assignment. I also had a mentor who worked in my department, whom I came to with some general questions, however, I was never restricted to just his knowledge and usually talked to the other people in the group who had more expertise in certain areas.

My career interests were both to try out an engineering position and learn about business. Since I was placed on a role that deals closely with the business side of the company, I learned more about that than I did engineering. I learned a great deal about how the business operates and what’s going on in the aviation industry. I learned that Engineering out in the real world has a lot to do with dealing with people and that the most successful workers know how to work with others, as you will often need information or help from others and knowing how to help others so that they can help you goes a long way. I learned to work closely with others, how to meet deadlines and how to present information to an
audience of engineers or coworkers. I learned about the intricacies of working at a plant that has manufacturing facilities and unions. If I were to go through the experience again, I would ask for more responsibilities a bit earlier, just because my time wasn’t fully occupied some of the earlier weeks and until I received my big project.

I lived in Danvers, MA and I would recommend against living in Lynn, where the plant is located, as it is not in a good neighborhood. I would get a ride to work from my roommates who also worked at GE Aviation for the term. One could also live in Boston and use public transportation to get to work, although the trip might take an hour each way. There were opportunities for social activities and a few co-ops participated in them, we would go out to dinner or hang out at each other’s places some weekends. GE Aviation also offered a lot of ways for employees to volunteer and give back to the community, I would recommend looking into the tutoring that some of the employees do at the local school early in your assignment if you would be interested in that sort of thing. Some co-ops also played sports outside while it was still warm, that’s also an option for some.

In conclusion I had a generally pleasant experience at my co-op with GE Aviation, the people were wonderful and were probably the best part of my experience. My lack of technical work was slightly disappointing at first, but I learned a lot about the business side instead, which satisfied me. If you are looking for technical work in your assignment, try to talk to the HR people and ask them to place you within the engineering or testing departments. Best of luck and have fun if you choose GE!
Mark Landy  
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Applied & Engineering Physics  
GE Aviation  
Fall 2011  

This semester, my co-op put me in the bearings and lube group within the Component Test Lab at GE Aviation. The group’s main responsibility is to run tests on problematic engine parts sent in by the other groups in the company. These past few months, I’ve been able to help out on a variety of tests, including a seal leakage test, an engine endurance test, and a vibration analysis test. My role in these tests can be as little as observing and learning test procedures, or as much as actually running the test myself. There was very little in the way of formal training for my assignments—I was simply learning by doing. There were, however, plenty of people to help me with any questions, including my manager, the bearings and lube group leader, and just about anyone else within the Component Test Lab.

I did not, of course, have the opportunity to apply knowledge gained in my quantum physics courses to any of my tests. Engines and aviation as a whole do not really fit in with most of the AEP curriculum (so far), but I pursued this co-op because I thought I might be interested in going into some form of aeronautical engineering in grad school or beyond. In my case, I discovered that this is not quite where I want to go with my life, and has made me change gears in order to pursue biomedical engineering instead. In terms of professional growth, I have gained a great deal of experience in interacting with colleagues—both inside my group and out. I’ve also learned how to take initiative when seeking new project assignments, and how to properly conduct myself in a professional setting.
In terms of housing, I had it pretty easy, as my father lives about half an hour from where I work, so I’ve just been living with him. For potential co-ops, however, GE Aviation provides a website where all of the co-ops can connect to each other, allowing them to find housemates, and they also provide links to landlords and other housing options in the area. For transportation, having a car is always nice, but not necessary to work here. There is a commuter rail stop within the plant, and the T provides easy transportation throughout Boston’s suburbs.

There are opportunities for community service and athletics, as well as fun events provided by GE Aviation. An on-site gym costs only $4/week, and there are free weekly activities such as after-lunch ultimate Frisbee, and after-work soccer. Community service opportunities with Habitat for Humanity and My Brother’s Table are encouraged on weekends. The co-ops receive funding to organize fun events, such as bowling and weekend skiing trips.

Overall, the worst part of this job was that the amount of work could be a little unpredictable, so that some days were spent mostly at my desk, while others were spent completely down in the lab. The best part, on the other hand, has been that it’s a great learning experience. By working in the Component Test Lab, I’ve had the opportunity to see many different parts of different kinds of engines, and to learn about all of them, rather than being focused on just one part of one engine. For someone interested in pursuing a career in aviation, I feel this would be an excellent foundation to build upon. For me, it was a good way to learn that I’d like to do something else, rather than continuing to pursue this as a career. Also, GE does not offer a two-term co-op (fall and summer, for example) right off the bat, but it’s very easy to apply for the second rotation. Best of all, for me, is that the second rotation does not need to be in the same division—I’ll be working at GE Healthcare next summer.
Lauren Min
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Mechanical and Aerospace Engineering
GE Aviation- Lynn, MA
Fall 2011

When I first drove past the gates of the Lynn GE Aviation facility, I was honestly quite astonished at how massive the site was: countless buildings and thousands of employees. During this first rotation, I was assigned to work in Supply Chain for Lynn Assembly, Test, and Overhaul (ATO) under Bob Loycano and Sue Carroll.

Working in ATO, I was able to get a diverse range of tasks, responsibilities, and larger projects to take on. Because I was fortunate enough to have such a wide range of projects in not just my building, but in several other buildings across the site; I was able to gain a very well-rounded co-op experience, collaborating with a diverse group of people and viewing many different perspectives.

In the building I worked, the T700, CT7, and the CF34 engines were being assembled and tested. It was always exciting to walk down the aisles of the assembly floor, and observe how the different modules and sections of the engines are built. One of the tasks I was given was to assist in the completion of a First Article Inspection of an output shaft assembly, where I took several torque measurements and inspected the assembly of an output shaft from start to finish. In addition to this First Article Inspection, I also assisted in a HIRSS (Helicopter Infra-Red Suppression System) Core Investigation project for Plant II. The HIRSS Core is a part of the helicopter where exhaust is removed and noise is reduced. The Investigation consisted of inspecting the HIRSS Cores using certain standards and tests with tools like shims and pre-sized molds. This was just an extraordinary experience, getting up close to the part, learning all the
minute details inside and out as well as the exact process each HIRSS Core must go through and pass in order to be shipped.

Furthermore, I also had the opportunity to take part in the FOD (Foreign Object Damage) Test Cell Inspections. Before engines are tested, the test cells need to be carefully inspected for any loose objects on the walls, ceiling, and floors of the cell to prevent any objects from flying into the engine as the test is running. This gave me the opportunity to see the fully built engines in cells ready to be tested up close and in front. The details of each engine were just exquisite.

Although inspections have been a huge portion of my co-op experience, I have also worked on assignments in regards to Gensuite Training Tracker and Support Central. I have used Gensuite Training Tracker to manage and regulate the trainings of employees in ATO, Plant I, Plant II, Plant IV, and Logistics, constantly in communication with the Quality Leaders regarding updates on trainees. On the other hand, Support Central is General Electric’s IT website system where Quality Leaders can create a Support Central website for each of their plants, allowing for the Quality team to easily share essential data and documents. After learning how to use Support Central during my first week, I was in charge of managing and updating the Support Central sites for the various Quality Leaders.

Through these projects, as well as several others I have not mentioned, I was able to expand my knowledge and grow as an individual contributing as much as I possibly could to the company during my 4 month co-op rotation. I must say everyone was so friendly, helpful, and supportive, especially my assignment leader Sue Carroll, who has played an essential role in making this co-op rotation such a wonderful experience for me. It was definitely a life-changing experience for me that I will never forget.
Lauren Min
Net ID: lm454
Mechanical & Aerospace Engineering
GE-Aviation: Lynn, MA
Summer 2012
Start Date: 5/21/2012
End Date: 8/3/2012

Returning to GE-Aviation Lynn for my second co-op rotation, I have had an extraordinary experience working in the Product Engineering Center. Through these past 11 weeks, I've been given the opportunity to further strengthen my engineering foundation, build a strong network, and grow as a leader and individual.

I was fortunate enough to have been assigned into the engineering department. I've been given projects where I have had to apply concepts that I've learned in classes as well as utilize new engineering software and techniques. I have had countless projects such as assisting continuous improvement program (CIP) owners with data analysis using software like Minitab and Unigraphics and creating a drawing for a change in design (CID). Through each project I have worked with program managers, specialists, lead engineers, and assemblers, learning what it takes to successfully launch a new engine or improve an existing one.

Aside from the intriguingly challenging work experience, GE-Aviation Lynn also has an exciting social aspect. During the summer, there were over 100 other co-op/interns and a plethora of social and professional networking events with opportunities to play a different sport each day with coworkers and manager luncheons at least once each month.
The K-Clip: Fall Co-Op Review

During my fall rotation I worked on the GE38 program at GE Aviation in Lynn, MA. Before I began my rotation I received an e-mail containing my position description. The description read as follows: “Support multiple international and commercial Turboshaft programs. Assist program managers to successfully execute customer deliverables. Work with various internal organizations including engineering, supply chain, and sourcing as well as with GE customers.” When I first read this description, I had absolutely no idea what to expect when I started work.

Not too surprisingly, the first couple of weeks consisted mainly of setting up my computer, adjusting to the flow of the office, and attempting to remember the loads of information being given to me from tours, introductions, and meetings in which I had no idea what was going on. To top it off, everyone spoke in a language of acronyms that one would only be able to follow if they had worked there for years, let alone two weeks. This was when I first learned that once you get an engineer talking about what they do, they suddenly light up and attempt to fill you with every bit of knowledge they have. Needless to say I was having the time of my life hopelessly attempting to remember everything I was told about the GE38 engine.

It wasn't until my third week that I received my first real project. I was simply asked if I was interested in doing some “light carpentry.” Jumping at any chance I had to get hands on and do some design work, I immediately accepted. The assignment was to build a crate to store flight test engines before they get shipped off. The assignment seemed relatively simple and gave me a good introduction into the process of getting products manufactured and learning about drawings and specs. Although this project wasn't too design intensive it was an incredible learning experience on how to work with manufacturers and clearly communicate what you need to have made. I learned early on the importance of “Murphy proofing” any design and that “the squeaky wheel gets the grease” (simply put, be persistent). Two lessons that proved to be invaluable during my entire rotation.

Once this project was under way, I got my second and debatably most significant assignment of my rotation. The assignment was to design an imbalance clip for the stage 5 blade of the power turbine module. The imbalance clip would be used to position a known amount of imbalance in the engine for a development test (High Cycle Fatigue Stairstep Test). Clip designs in this area of the engine have been used before on earlier engine lines so the initial intent was to leverage a design that had worked in the past. Soon after designing and analyzing a clip similar to the leveraged design, it was evident that the stresses would far exceed the material properties and the design would not work. After a couple of design iterations, a new a feasible clip design began to take form.

Because GE works with a German company, MTU, on the power turbine module, the engineers from MTU were closely involved during this process. We had weekly tech review meetings where we would discuss my designs and analysis of the clip and any changes I thought were necessary. Working with engineers from a different country turned out to be a much greater learning experience than I had expected. Not only did I have to clearly communicate my analysis and calculations, but I had to speak slowly and clearly enough for the engineers from MTU to understand. By this time in my rotation, I had already begun to speak in acronyms, and to top it off, I speak so quickly that people who are fluent in English often have to ask me to slow down. Adding nerves to the equation, I'm genuinely surprised that the MTU engineers got anything productive from my first couple of presentations. After getting the opportunity to speak one-on-one with the MTU engineers, I was able to develop my communication skills
so that I was able to work more efficiently with the MTU engineers. Beyond just trying to communicate to the engineers from MTU, I was able to focus on presenting my analysis as clearly and concisely as possible. This greatly helped me improve my presentations to become more focused and informative. Working with MTU also proved to be helpful because they were able to run the model simulations and computer stress analysis that I, as a co-op, did not have the knowledge or resources to run.

Beyond just the design and analysis, I was also able to oversee the manufacturing of all the clip prototypes. By the end of my co-op, I had made so many iterations, that I was very well known by the people I like to call the “Clip Trifecta”. This included Tim from punch-press, who helped me acquire the all sheet stock I could ever need, Al, who ran the water jet machine and was always willing to help me cut out whatever design I sent his way, and Tim from Tool and Die who would mold the clips to the blade from just a blank cut-out and a 3D sketch I gave him. All of these GE employees were clearly experts in their field and were able to provide me with insight into the manufacturing process so that I could make a clip that would not only hold up to the stresses, but would be easy to assemble; a critical and necessary function of the clip.

After much time and devotion, the clip became known as the “K”-clip and everyone I worked with knew about it. By the final clip design, I could easily say that everyone in my office had either directly given me advice or had some part in helping me design the clip. So, when it came time to begin the HCF Stairstep test, everyone in the office was looking forward to seeing the k-clip work. The same clip that was initially supposed to be so simple but had turned into a 2+ month project.

This brings me to November 18th, 2011. 8 am. Test Cell #2. I was given honors of putting on the first k-clip (mass:.95g). The engineers had marked which blade the clip was going to go on in order to provide the correct imbalance and all I had to do was install the clip. However, unlike my numerous test trials, there was now an exhaust frame in the way, and if I dropped the clip in the PT module, there was no getting it out and I essentially ruined the entire test. I honestly can’t tell you if it was excitement, nervousness, or pure fear, but I swore I was going to throw up, or worse, drop the clip.

With the help of a screwdriver and some maneuvering, the clip went on just as expected and I was allowed to watch the test from the control room. There was a camera on the engine and for the next two hours of my life, my eyes did not move. I guess I expected to see sparks and an explosion at any point, but it never came. It was reassuringly uneventful.

After that day, the testing continued on and continued through the end of my co-op. I had numerous other assignments after the clip that taught me more about the GE90 turbofan engine than I could have ever hoped for, but none of them compared to the feeling of watching something you design go on an engine and work. I never in my wildest dreams thought I would experience anything like this during my co-op rotation and I don’t think it would have been possible without the group of people I had the opportunity to work with. Looking back on the position description that I received before my rotation began, all I can say is that this co-op exceeded my expectations in every single way and I cannot wait until I begin my second rotation in the summer.
Kristen Reynolds
Ker68
Mechanical Engineering
GE Aviation- Summer 2012

During my summer rotation with GE Aviation, I was placed in the role of a project engineer for the CT7-2F1 engine line. This role was a more management based role rather than the technical role I had in the fall. This was largely due to the fact that there were 160 interns/co-ops at GE in the summer as compared to the 50 that were present during my fall rotation. Because of this increase in interns, most students did not get their top choice in position. Although I was hesitant at first as to how much my educational background could help in this role, I ended up getting more technical expertise out of this rotation than I ever thought possible.

The three main projects that I worked on were heavily based on the project management role that I was placed in, however there was a lot of technical knowledge that had to be learned and understood to accomplish them. My biggest project was mapping out and scheduling the conversion plan of a CT7-2E1 engine into a CT7-F1 engine. The goal of the program was to utilize 6 2E1 engines and convert them into 2F1 engines to save the company the cost of having to purchase new hardware. My role was to contact people from the different departments to figure out what had to be done to make this a possibility. These departments included quality, engineering, instrumentation, manufacturing, and project. Once I was able to consolidate the needs of each department, I could plan out what had to be done to the engine and when once it came into the GE plant in Lynn. I was also able to draft up all the forms that had to be submitted and obtain all the necessary approvals.

This project gave me a significant insight into how the engine works and all the different parts and components that make up a jet engine. Some of the actions that had to be taken were
comparing parts lists for the 2E1 and 2F1 engines to see what parts had to be changed out, mapping out the engine teardown and rebuild, figuring out which parts had to be instrumented or inspected and cleaned, as well as learning about why certain upgrades were made to the 2E1 to make the 2F1 engine more efficient.

One of the benefits to being in a project role was that I was also able to gain a better understanding of how the business runs as a whole. I was able to sit in on a number of upper level meetings and observe how issues are handled and how money and resources are allocated within a program. This understanding of the business helped me understand how the design engineers and business leaders work together to make the most efficient and profitable engines.

Outside of GE, there were a lot of activities going on for the co-ops as well as a lot of GE run summer networking events. Through the GE intern/co-op listserv, I was able to participate in fun events such as Redsox games, laser tag, dinners, flag football, and many other social events throughout the summer. Beyond just the co-op network I developed, I also joined the GE softball team which consisted of a number of full time employees at GE. This was a fantastic opportunity to network with GE employees in a laid back setting and ask them questions about what it's like to work for GE full time without the pressure that comes from a formal networking event or interview. Overall, I had an amazing time this rotation. I learned a lot about jet engines and I made a lasting network of friend at GE.